

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A manually operated resuscitation device comprising:
a patient interface having a gas inlet and a patient airway delivery means for delivering pressurised gas from the gas inlet to the patient airway, the interface having a one way intake valve downstream of the gas inlet; and
flow control means disposed in flow communication between the gas inlet and patient airway engagement means for automatically variably limiting the rate of gas flow between a minimum flow rate and a maximum flow rate.
2. A manually operated resuscitation device according to claim 1 wherein the patient interface is selected from the group consisting of: a bag-valve-mask device; a pocket mask device wherein the patient interface comprises a patient mask with said gas inlet and a patient face sealing edge; an endotracheal tube; and a face shield device comprising a flexible sheet with a tube therethrough, the tube having an upper end with operator mouthpiece about said gas inlet and a lower end with patient mouthpiece.
3. A manually operated resuscitation device according to claim 2 wherein said bag-valve-mask device comprises:
a patient mask having a gas inlet and a patient face sealing edge;
a flexible bag having a one way intake valve in flow communication with a gas source and a one way output valve in flow communication with the mask inlet;
exhaust port means in flow communication with the patient mask for exhausting exhaled gas from the mask when the bag output valve is closed; and
said flow control means disposed in flow communication between the mask and bag for automatically variably limiting the rate of gas flow from the bag to the mask between said minimum flow rate and a maximum flow rate.
4. A manually operated resuscitation device according to claim 1 wherein the flow

control means comprise:

a flow control valve housing with control valve inlet, control valve outlet and an orifice therebetween;

a gas flow sensor in flow communication with the valve inlet; and

5 orifice restriction means controlled by the gas flow sensor for automatically restricting gas flow through the orifice in response to the flow of gas impinging on the gas flow sensor.

10 5. A manually operated resuscitation device according to claim 4 wherein the gas flow sensor is selected from the group consisting of: a spring loaded valve plug; a flexible diaphragm; pneumatic pressure sensing valves; rotating flow meter propellers; and electrical gas flow sensors.

15 6. A manually operated resuscitation device according to claim 4 wherein the orifice restriction means comprise a valve seat and movable valve plug.

20 7. A manually operated resuscitation device according to claim 6 wherein the plug includes a gas flow impingement surface and a valve seat mating surface, the plug being biased away from the valve seat and urged toward the valve seat by gas flow against the flow impingement surface.

25 8. A bag-valve-mask device according to claim 6 wherein the housing includes a bulkhead downstream of the valve seat, the bulkhead including at least one perforation; and wherein the plug is mounted to an upstream end of a valve stem, the valve stem is slidably mounted within a through bore in the bulkhead with a spring disposed about the valve stem between the plug and bulkhead.

30 9. A bag-valve-mask device according to claim 8 wherein the valve stem includes a retainer means downstream of the bulkhead for preventing removal of the stem from the bore.

10. A bag-valve-mask device according to claim 9 wherein the retainer means comprise a shoulder with bulkhead abutting surface.

5 11. A bag-valve-mask device according to claim 8 wherein the valve stem includes a motion limiting means disposed on the valve stem a selected distance from the bulkhead for limiting the range that the stem can slide within the bore.

10 12. A bag-valve-mask device according to claim 11 wherein the motion limiting means comprise a shoulder with bulkhead abutting surface.

13. A bag-valve-mask device according to claim 7 wherein the valve seat and valve seat mating surface are conical surfaces.

15 14. A bag-valve-mask device according to claim 8 wherein valve stem and bulkhead bore have a clearance space disposed therebetween sufficient to allow lateral motion of the valve plug relative to the valve seat.